Vegetated Shingle Habitat Map using CASI & LIDAR

Data

The Habitat Map classifications were carried out on a site by site basis, with the attribute 'Site' containing the site name. This product is derived from CASI multispectral data gathered on the date provided in the Attribute 'CASI_Date' and LIDAR elevation data gathered on the date provided in the Attribute 'LIDAR_Date'. It also uses ground truth data collected by Natural England / Environment Agency after the CASI capture. The year of analysis and version number of the product are in the attributes 'AnalysisYr' and 'Version' accordingly.

Ground Data

Ground data was collected by Natural England / Environment Agency staff. This involved the habitat classes being collected digitally using ESRI collector software. These samples cover all habitat classes being identified at the site with as great a geographical range as possible. This information was then used for the classification training and ground truthing of the habitat map.

Description

This habitat map is a remotely sensed product, using CASI and LIDAR data and potentially other GIS products. The data is in ESRI Shapefile format and can be loaded in a GIS. Please display these using the optimal display classes contained in the layer file. The analysis extent for each site was defined according to additional data and adjusted according to field notes made during the Ground Truthing Survey.

It classifies the habitats into site relevant classes, visible at the time of CASI image capture. The attribute 'Class' provides the classified habitat. This output layer is a merged product of many years of work, therefore if applicable the class name has been updated to the most suitable recent name to fit the current naming structure.

For habitat class descriptions refer to:

– Vegetated Shingle Mapping 1 classes for sites: Kessingland (2018), Orfordness (2019), Pagham (2020).

The habitat mapping was carried out for the Environment Agency & Natural England Collaboration: Operational Use of Remote Sensing for Environmental Monitoring.

The habitat map was created using a supervised classification, which means ground truth data were used to train the model.

The classifications had a quantitative accuracy assessment carried out on them in the form of a confusion matrix using ground data set aside and not used in training the classifier.

Alongside this aerial photography was used to check and make final improvements to the habitat map.

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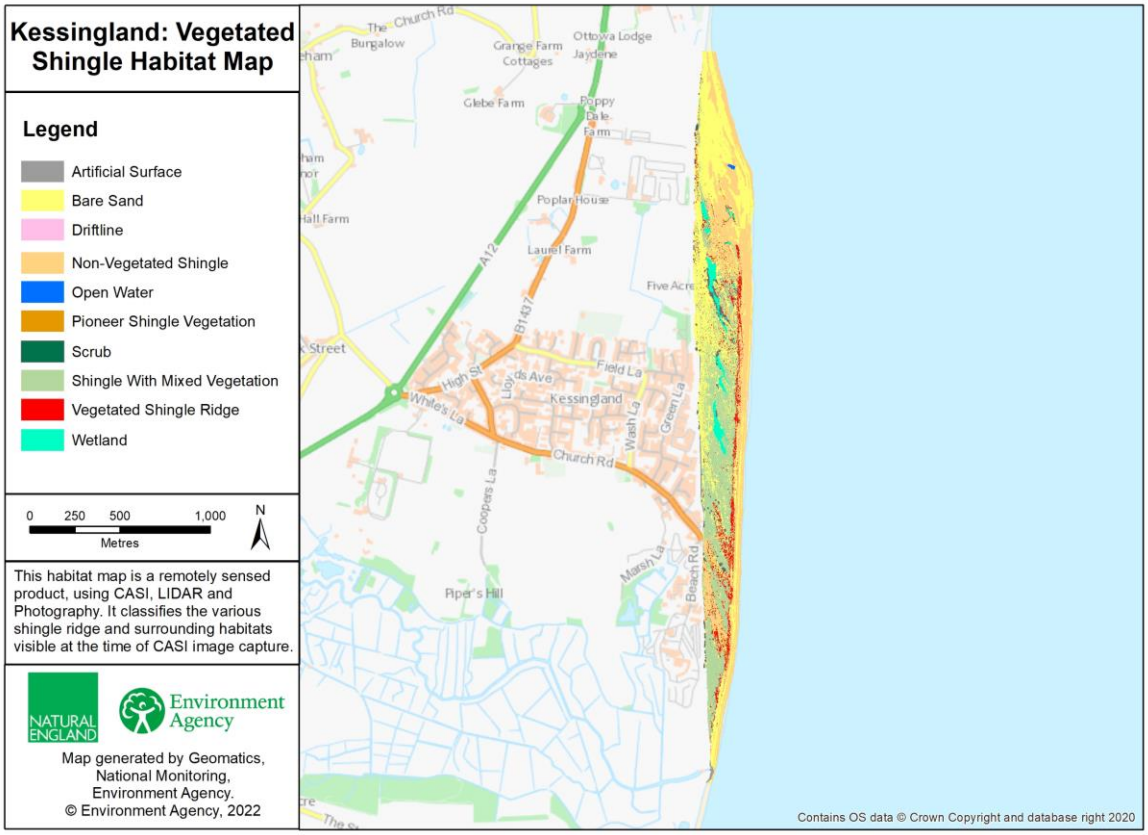
Example of the Vegetated Shingle Habitat Map Product:



Vegetated Shingle Mapping 1 - Class descriptions (not all classes are present at each site)

Artificial Surface – Built artificial surfaces, such as buildings, roads, car parks, tracks, groynes and rock armour.

Bare Sand – Bare sand can be found on the open beach, naturally blown and on tracks.

Driftline (vegetation or material) – Strandline vegetation is seasonal vegetation on high tide mark. Key species to this community includes Atriplex, Prickly Saltwort, Sea Sandwort and Orache Species. Foreshore driftline vegetation is near the sea, just at strandline, with low cover of mainly annual species, either in patches or in linear pattern on strandline.

Grassland Communities – Short grassland is found on inland areas of shingle away from the pioneer zone, with less lichen present and more open. Key species included in this community are Red Fescue, Sea Campion, Sheeps Sorrel and Grey Hair-Grass. Long grassland is more mature and grass- dominated with denser vegetation and thicker turf below. Key species included in this community are False Oat Grass, Red Fescue, Sea Campion and Ribwort Plantation.

Intertidal Mud – This includes all bare mud within the intertidal zone.

Lichen and Bryophyte Rich Vegetation – Short vegetation with major lichen element and occasional false-oat grass on dry areas. Key species included in this community are Cladonia Lichen spp., Sea Campion, Herb Robert, English Stonecrop and other.

Non-Vegetated Shingle – Un-vegetated shingle which can be naturally bare or a damaged surface. There is no separation of shingle within the intertidal zone and is not limited to the shingle ridge.

Open Water – Any water bodies, whether sea, ponds, pools, lagoons, lakes or artificially created water bodies are included in this class. These are identified only from the CASI data.

Pioneer Shingle Vegetation – Vegetation above high tide mark, developing on a natural undisturbed shingle surface following ridge pattern. May be up to 50% bare surface within stands. Key species included in this community are Sea Kale, Sea Pea, Curled Dock and Sea Campion.

Saltmarsh – Saltmarsh is defined by halophytic vegetation, which is generally found where there is regular immersion by the sea. Some areas of low- lying ground which used to have been regularly immersed but have since been cut off may still contain halophytic vegetation. It is also possible that halophytic vegetation is surviving due to saline percolating through shingle layers. Saltmarsh was defined in this map using the Environment Agency Saltmarsh Extents as well as using the highest astronomical tide as a guide. Key species included in this community are Cord Grass, Glasswort, Sea Aster, Sea Purslane, Annual Sea-Blite, Sea Lavender.

Scrub – This is defined as scrub included within the shingle ridge system. Vegetation was not classified from the Canopy Height Model (CHM), instead using the ground data and CASI imagery. Areas of vegetation which were over 2m tall, but under the minimum area to be considered woodland, are also considered as Scrub. Bramble (*Rubus fruticosus*) is also included within this class.

Shingle with Mixed Vegetation - Generally towards land, relatively stable, mainly perennial species some annuals. May be species-rich with red fescue, bucks-horn plantain, sea thrift, annual grasses, wild carrot, stonecrop, lichens.

Vegetated Shingle Ridge – Vegetated shingle ridges with 'weedy' open vegetation with patchy cover. Medium height, mostly near sea, can be in linear pattern. May be a mix or dominated by one or two species. Key species included in this community are Dock, Ragworts, Sea Beet and Yellow Horned Poppy.

Weedy / Ruderal Vegetation – This class includes Weedy / Ruderal Vegetation which has formed dominant patches within the system. These areas often have little or no understory species and may have been cleared of scrub in the past.

Wetland – This class contains species generally adapted to permanently or seasonally flooded ground conditions and can contain areas of a single dominant species or a mosaic. Wetland found in low lying areas. Reeds and Juncus may be found here.